published, excepting that Sowerby, in the original diagnosis *, mentions that it is testaceous. It is white, glossy, and slightly concave externally, with a groove and a ridge parallel with the outer curved margin, whilst the straight or columellar side is finely serrate. Parallel with the curved outline may be noticed numerous faint subpellucid lines which arise between the denticles on the serrated edge.

[To be continued.]

BIBLIOGRAPHICAL NOTICES.

Memoirs of the Geological Survey of the United Kingdom.—The Cretaceous Rocks of Britain. Vol. III. *The Upper Chalk of England.* By A. J. Jukes-Browne. With Contributions by William Hill, F.G.S. 8vo. Pp. x and 566. With 79 Illustrations in the text and 1 Plate. 1904. E. Stanford, London; J. Menzies, Edinburgh; and Hodges & Co., Dublin. Price 10*s.*

As in the case of Vol. II. of this work (noticed in the Ann. & Mag. Nat. Hist. for February 1904), the Board of Agriculture and Fisheries, desirous that agriculturalists and others should have full benefit, has distributed this volume also for review.

The Memoirs of the Geological Survey of the United Kingdom always bring together much valuable material, and this volume is in no way wanting in this respect. The Upper Chalk is defined by the authors as consisting of the zones of *Holaster planus*, *Micraster cor-testudinarium*, *Micraster cor-anguinum*, *Marsupites*, *Actinocamax quadratus*, *Belemnitella mucronata*, and *Ostrea lunata*. The zonal divisions of the Chalk are fully recognized in this volume, although the authors seem reluctant to part with the obsolete divisions of "Upper," "Middle," and "Lower," which have now such small significance. They also seem to hanker after a fresh system of zonal nomenclature (p. 5), but this seems to us to be unnecessary. In the descriptions of the coast-sections full credit is given to Dr. Rowe, who must certainly feel rewarded in reading the generous tribute to his work in the Preface by the Director. Indeed it is quite clear, and is so stated (p. 38), that the publication of Messrs. Rowe and Sherborn's work necessitated the re-writing of those parts of this Memoir which deal with the districts that they have examined; and this is the more clearly brought out at pp. 275-278 ("Yorkshire"), if anyone will take the trouble to compare the official account with that recently published by Dr. Rowe in the 'Proceedings' of the Geologists' Association. It is more and more evident that future work in the field must be conducted by those who have more than a working knowledge of the zoology of the beds which they are surveying, as the exactitude of results achieved

* Tankerville Cat. p. xi.

of late years in the Silurian, Carboniferous, and Chalk rocks has amply demonstrated.

After the description of each coast-section, the authors deal in detail with the inland exposures, and collect together a mass of information which should prove extremely valuable when a zonal survey of Counties is undertaken. That this must come in the near future is evident by a recent attempt by Mr. Jukes-Browne himself to indicate the zones in the Chalk of Suffolk from fossils collected in pits. In the description of the Norfolk coast, Mr. Jukes-Browne establishes a new zone, the zone of *Ostrea lunata*, on the collections of Messrs. C. Reid and R. M. Brydone: the results obtained by the latter were published in 1900. It is comforting to be reminded that there is a certain amount of this interesting zone inland, as shown by the Well at Mundesley, since the northern shore-mass of *lunata* Chalk at Trimingham is almost worn away.

Chapter xxi. is devoted to a sketch of the Upper Chalk of France, wisely inserted for comparison. Chapter xxii. (pp. 302–353), dealing with the microscopical characters of the Chalk, by Mr. Hill, is a summary, with additions, of his well-known papers on the subject. The author is indebted to Mr. F. Chapman (now of Melbourne) for determining the Foraminifera and Ostracoda (p. iv). A discussion of the chemical composition of the Chalk occupies Chapter xxiii. (pp. 354–360). The bathymetric conditions and the variations of the sea-bottom during the formation of the Upper Chalk occupy Chapter xxiv.; an account of the economic products, Chapter xxv. (pp. 379–402); of the physical features, Chapter xxvi. (pp. 402–424); and of the water-supply from the Chalk, Chapter xxvii. (pp. 425–446). One Appendix contains critical remarks on some of the fossils, and gives a list of all the known fossils up from the Upper Greensand (Selbornian) to the *O. lunata* zone, with careful indications of the zonal succession. Appendix II. gives a full Bibliography of publications relating to the rocks and fossils of the Upper Cretaceous Series of England.

We congratulate the Officers of the Geological Survey and Messrs. Jukes-Browne and Hill on having completed a very laborious and tedious task. We wish we could do the same for the printers. The paper seems better than usual, but there appears to be a difficulty in keeping the type clean; while in two copies of this work that we have seen the diagram at p. 206 is shorn of many of its letters. There are a few editorial slips—e. g., *Pecten serrat* at p. 12. Many of the woodcuts are too antiquated for current books; such new ones as that on p. 26 are indeed a long way "after Rowe"; and it is puzzling to distinguish in the picture at p. 91 the special layers of flint alluded to in the text.

Pictures of Bird-Life. By R. B. Lodge.
London: Bousfield & Co. 1903.

Nowhere, perhaps, has the perfection of the camera and of photographic methods been more appreciated than among field-naturalists.